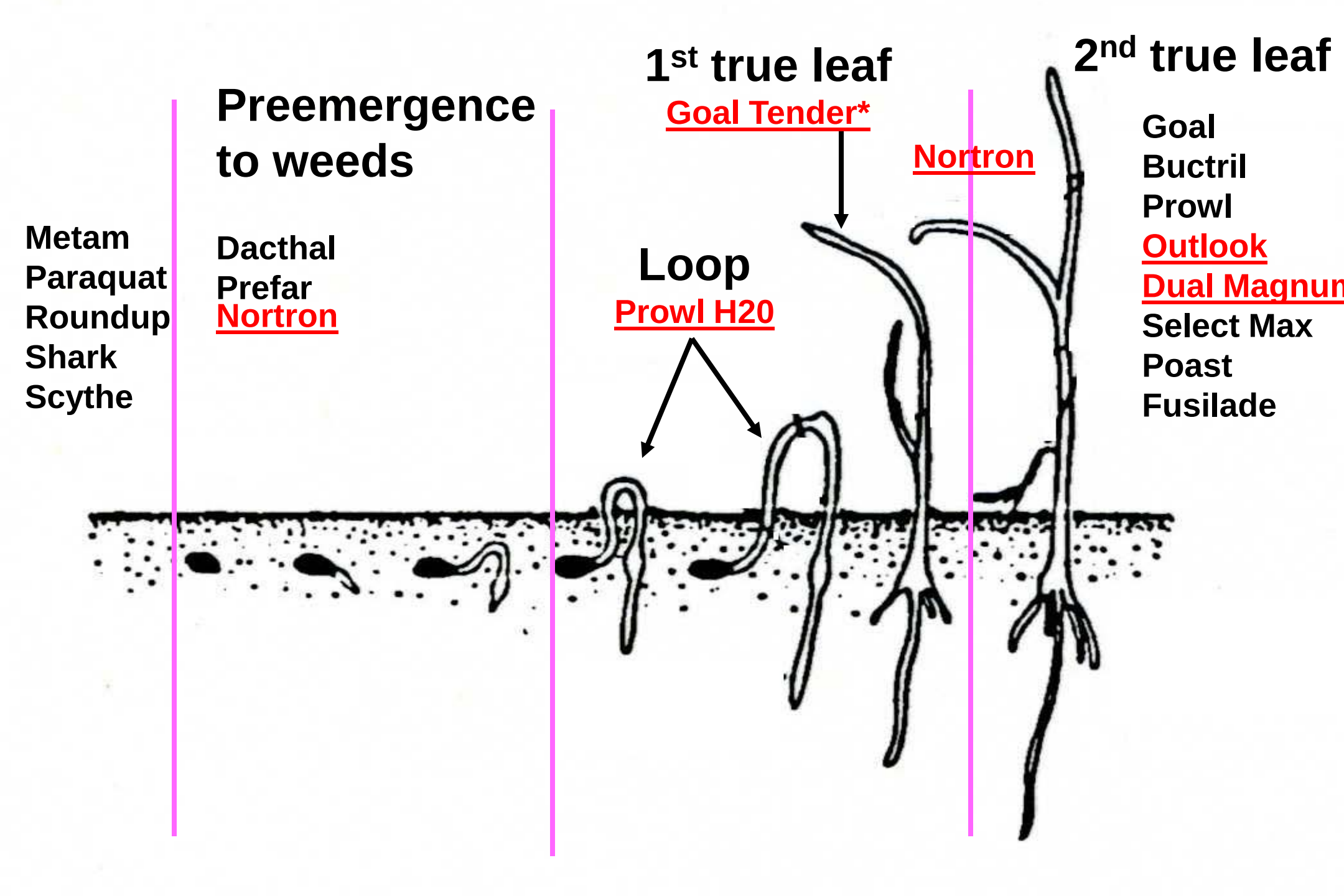
Nutsedge and Broadleaf Weed Control in Onions

Richard Smith
Farm Advisor, Monterey County


Preemergence to weeds
Metam
Paraquat
Roundup
Shark
Scythe
Dacthal
Prefar
Nortron
1st true leaf
Goal Tender*
Loop
Prowl H20
Nortron
2nd true leaf
Goal
Buctril
Prowl
Outlook
Dual Magnum
Select Max
Poast
Fusilade

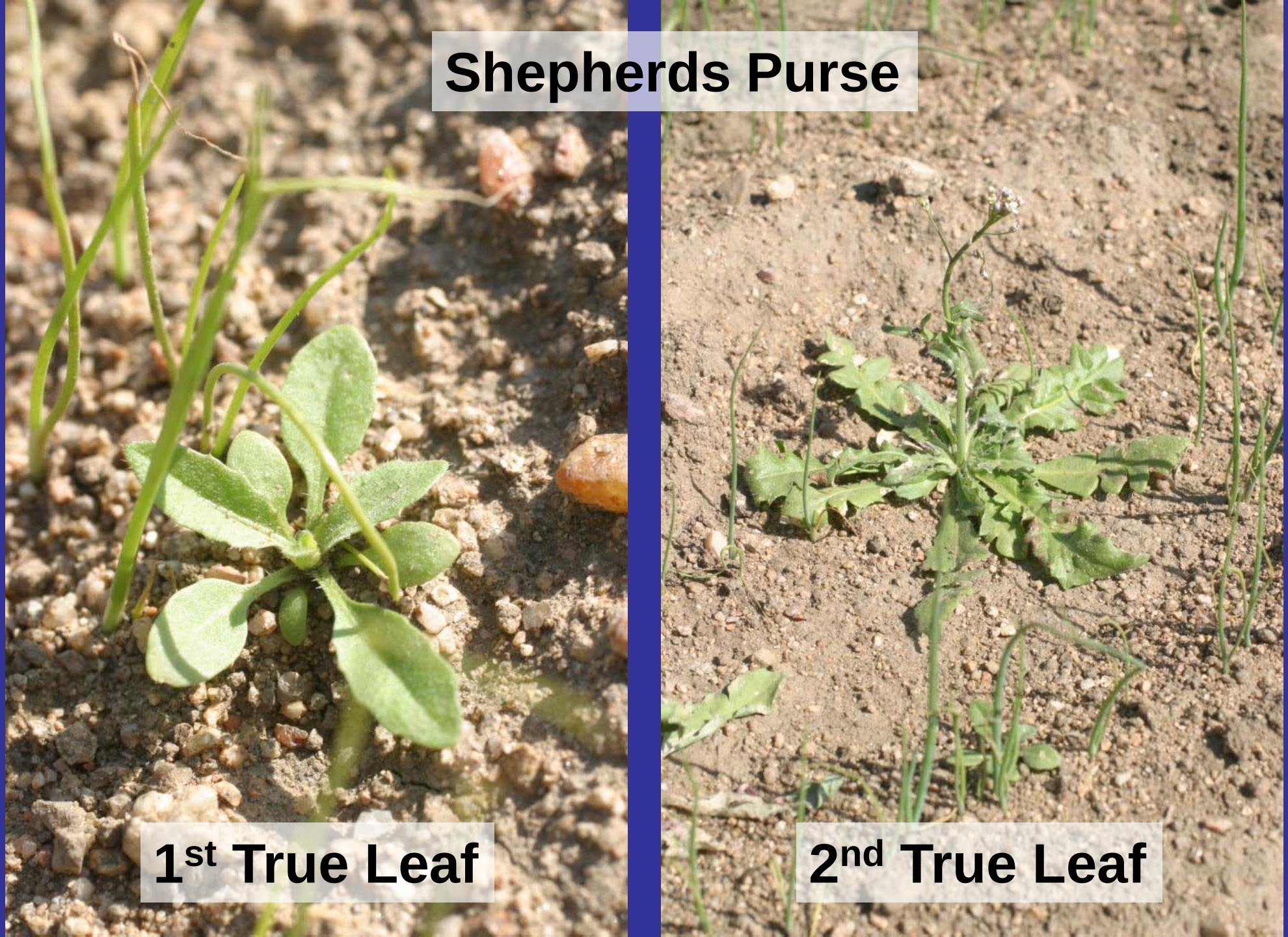
Weed Control in Onions

- Due to dense populations, we have minimal ability to effectively cultivate weeds and hand weeding is expensive
- However, the ability to apply preemergence followed by post emergence materials can provide excellent weed control
- This can make subsequent hand weeding more efficient and economical

Early Post Emergence Application

- Goal Tender
  - Can be applied at the first true leaf stage*; this concept is to try to kill weeds at an earlier stage in order to more effectively control them. This helps reduce hand weeding costs.

* This label is being revised and the new wording will stipulate minimum temperatures at which this material can be applied as well as clarification of the growth stage. There will also be indemnification wording. This is a powerful tool for onion production and we need to safeguard this use pattern.


Shepherds Purse
1st True Leaf
2nd True Leaf

Regrowth of weeds not completely killed

Many of these weeds not killed initially end up having to be removed by hand

Post Emergence Applications of Preemergence Herbicides

Onions are a long-season crop and it is important to apply a preemergence material later in the growth cycle:

- Goal 2XL
- Nortron
- Prowl H2O
- Nutsedge Herbicides
  - Outlook, Dual Magnum

Weed Control in Onions

- At this point there is a good array of registered materials that can provide good control of a wide spectrum of weeds in onions
- The challenge now is to work with manufactures to retain these registrations and to expand registrations for materials that can provide control of specific weeds

Broadleaf Weed Control

- Nortron was the new registration in 2008 and we have conducted trials to evaluate its efficacy and safety

Treatment	Rate/A	Timing	% Weed Control
Untreated	----	----	0
Dacthal FB Goal Tender	1.3 gal 6.0 oz	Pre post	99
Goal Tender	0.5 ounce	Preemergence	76
Goal Tender	1.0 ounce	Preemergence	85
Goal Tender	2.0 ounce	Preemergence	95
Nortron	16 ounces	Preemergence	53
Nortron	24 ounces	Preemergence	51
Nortron	32 ounces	Preemergence	55
Nortron FB Nortron	16 oz 16 oz	Pre post	44
Nortron FB Nortron	32 oz 16 oz	Pre post	67
Nortron FB Goal Tender	16 oz 6.0 oz	Pre post	98
Nortron Fb Goal Tender	32 oz 6.0 oz	Pre post	99

Treatment	Rate/A	Timing	% Weed Control
Untreated	----	----	0
Dacthal FB Goal Tender	1.3 gal 6.0 oz	Pre post	99
Goal Tender	0.5 ounce	Preemergence	76
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Nortron FB Goal Tender	16 oz 6.0 oz	Pre post	98
Nortron Fb Goal Tender	32 oz 6.0 oz	Pre post	99

Effectiveness of Nortron

- Nortron preemergence at 24 and 32 ounces/A was nearly as effective as Dacthal in a trial where lambsquarter was the main weed
- It was not effective on lambsquarter post emergence
- When followed by post emergence applications of Goal Tender (1st true leaf) it provided excellent weed control
- 32 ounce had reduced yields in 2008 and 2009 trials

Nutsedge Weed Control Studies


New nutlet forming at
end of rhizome start to grow
when plant has five leaves
original
nutlet

- Nutsedge cannot tolerate shade
- Unfortunately onions do not provide sufficient shade to inhibit the growth of nutsedge
- Traditional ways of dealing with this weed were multiple applications of acid fertilizer

Nutsedge Control Materials on Onions

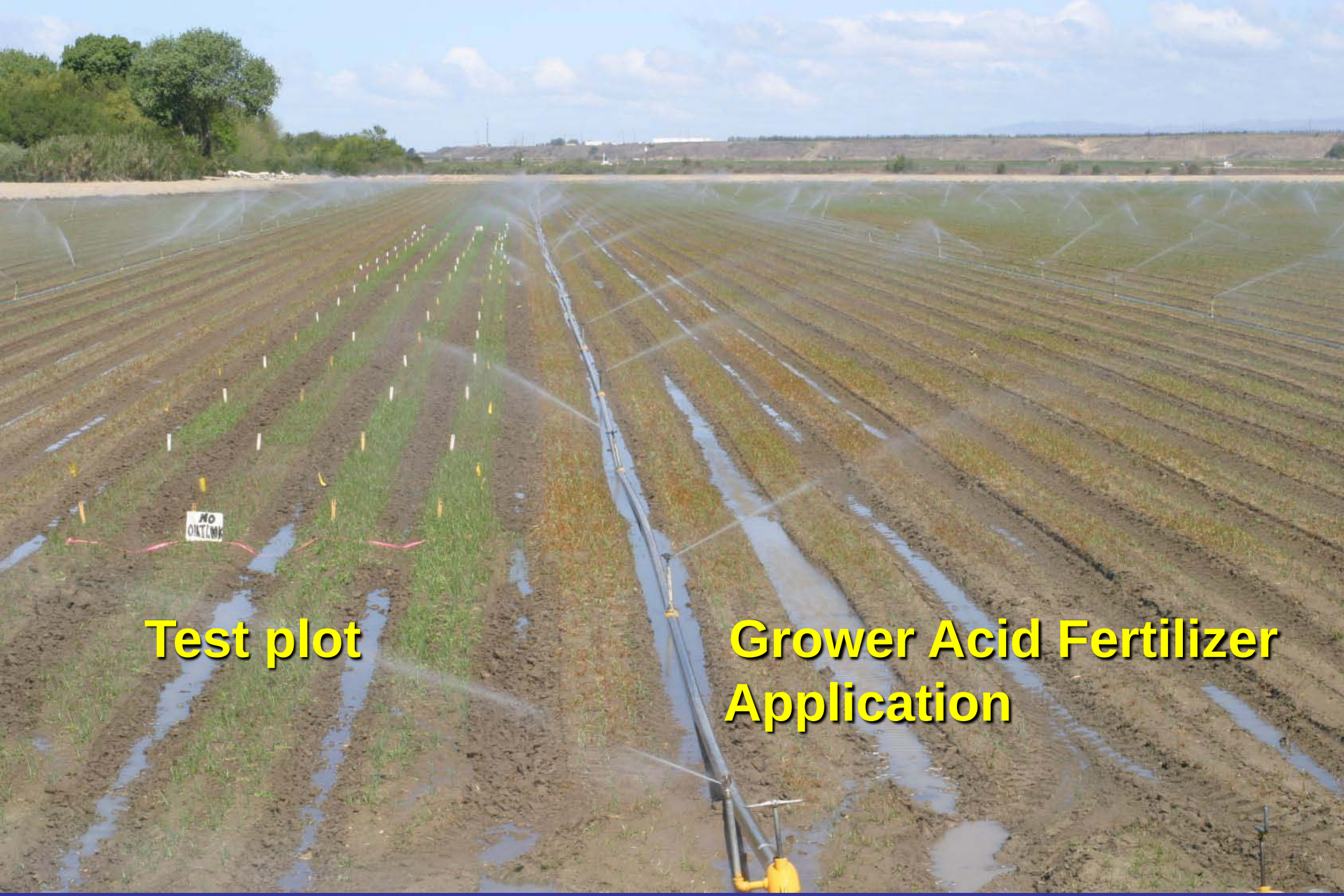
- In spring of 2007 Outlook was registered in California for use on dry bulb onions at the 2nd true leaf stage
- In October of 2008 Dual Magnum was registered for use at the 4th true leaf stage

Nutsedge Control Materials on Onions

- The problem with using Outlook and Dual Magnum is that they do not control emerged nutsedge
- In our area, by the 2nd true leaf, nutsedge is typically well established
- One idea that we examined was burning the nutsedge back and then applying Outlook to see if it could inhibit regrowth of the weed

Nutsedge Control Materials on Onions

- Three strategies tested:
  - 1) 1st true leaf applications
  - 2) Burn back nutsedge with acid fertilizer then apply Outlook
  - 3) Basagran evaluations


Test plot
Grower Acid Fertilizer Application

- At the 2nd true leaf stage nutsedge was well developed

Treatments

Treatment	Material/A	Application
7-7-0-7 Fb Outlook 6.0 Fb Outlook 6.0[1]	35 gallons 7.0 oz 7.0 oz	First True Leaf
7-7-0-7 Fb Outlook 6.0	35 gallons 14.0 oz	First True Leaf
7-7-0-7 Fb Outlook 6.0 Fb Outlook 6.0[1]	35 gallons 7.0 oz 7.0 oz	Second True Leaf
7-7-0-7 Fb Outlook 6.0	35 gallons 14.0 oz	Second True Leaf
Untreated	----	----

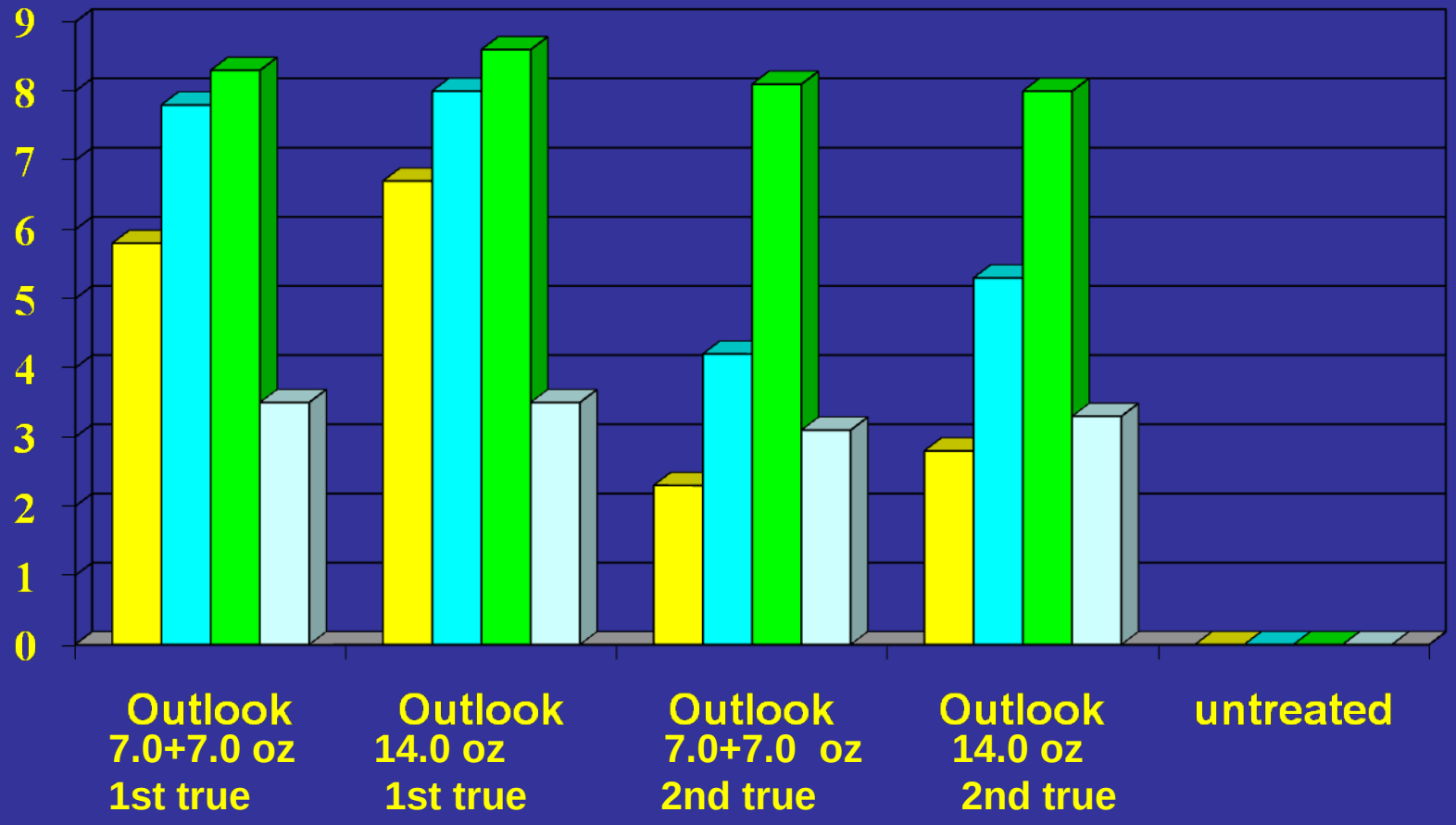
1: 14 days later

Post Acid Fertilizer Application


Untreated
Outlook 14.0 oz
1st true leaf
after 7-7-0-7

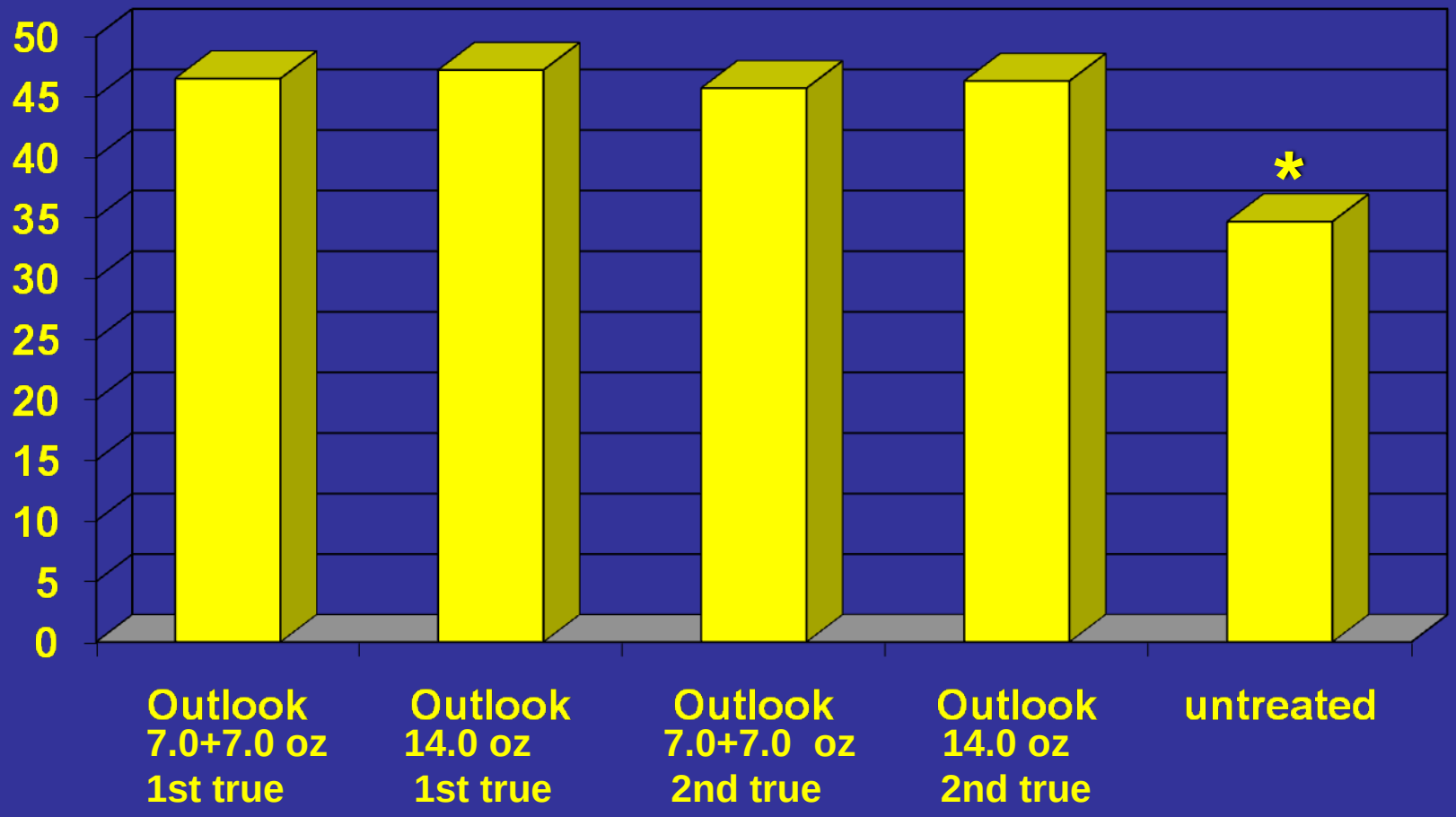
Weed Rating
Outlook After Acid Fertilizer

April 23; May 4; June 1; and August 9



Onion Yield

Tons/A



2008 Nutsedge Control Trial
Dehydrator Onions

Onion Yield Evaluation

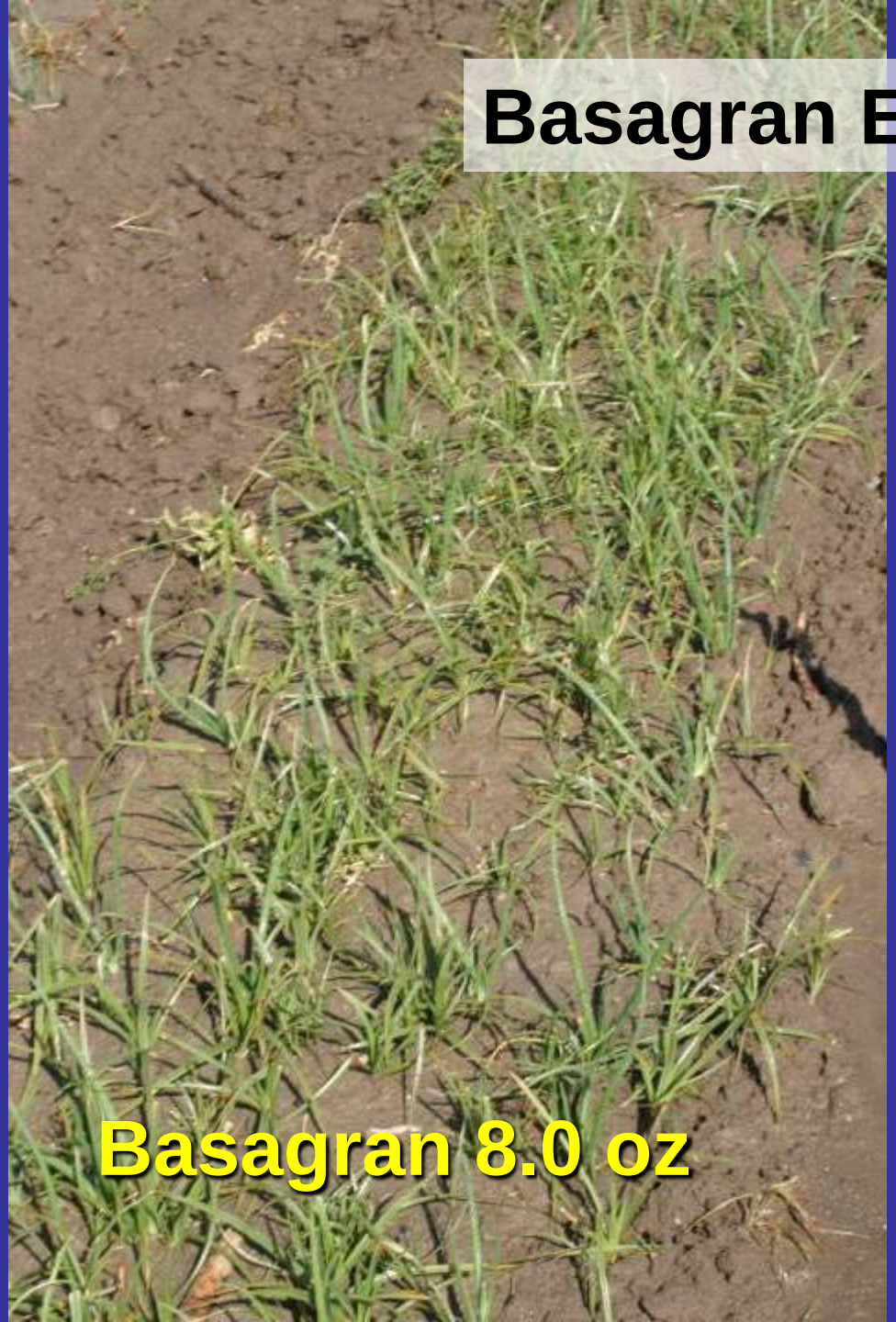
Outlook 14 oz
1st True Leaf

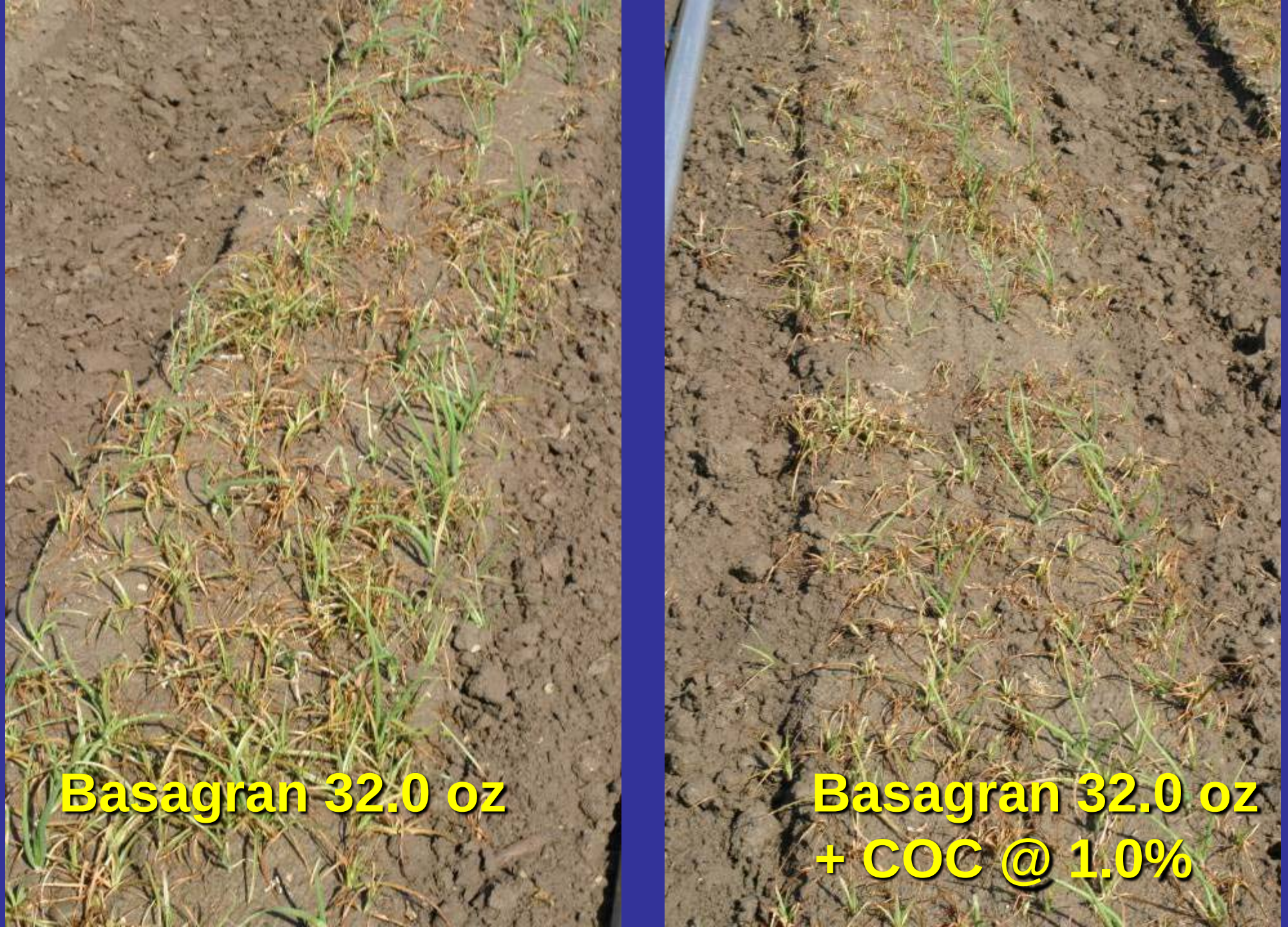
Untreated

Summary

- Applying Outlook at the 1st true leaf stage was safe to the crop, but it is seems doubtful that BASF will amend the label to allow this earlier use
- Burning nutsedge back with acid fertilizer provides a means to make Outlook and Dual Magnum work

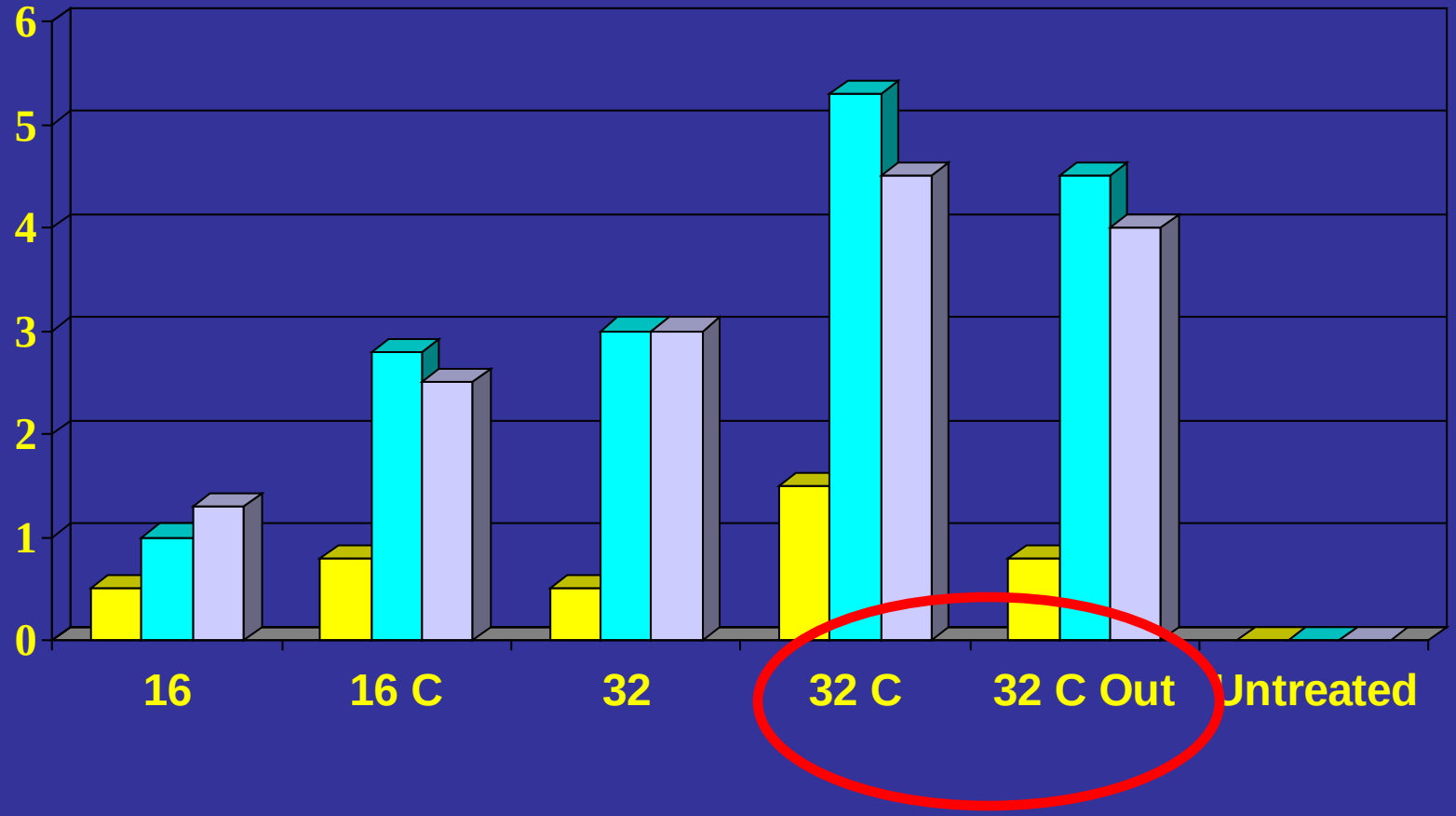
Basagran Evaluations




Basagran 32.0 oz
Basagran 32.0 oz
+ COC @ 1.0%


Untreated
Basagran
+ Outlook

Basagran Trial
Phytotoxicity Ratings
April 23; May 4; June 1



Basagran Trials

- Basagran was tested as a burnback material for nutsedge
- It is effective, but at present, Arysta has no plans to register its use on onions

- indemnified labels should be considered for minor crops

Tips on the use of Outlook

- It needs to be applied and activated within a day or so of the acid fertilizer
- Applying with irrigation is a good strategy to apply it and activate it at the same time
- If it is not activated quickly the nutsedge may regrow and it will not work
- Do test strips of fertilizers to determine the formulation and rate to effectively burn back the nutsedge

Google Cooperative Extension Monterey

Vegetable Crops & Weed Science

Conduct an applied research and educational program in vegetable crop production and weed science for crops grown in Monterey, Santa Cruz and San Benito Counties. Production issues include soil fertility, abiotic problem diagnosis, cover crop management and new crop development. Weed identification services are provided, as well as research on weed control.

Viticulture

Has cross-county
Extension progra
Santa Cruz Count
industry.

Youth Devel

Youth developme
youth, youth servi
organizations in t
natural resource education, an

Onions - Dry Bulb

- 2009 Dry Bulb Onions Weed Control Studies
- 2008 Dry Bulb Onion Weed Control Studies
- 2007 Dry Bulb Onion Weed Control Studies
- 2006 Dry Bulb Onion Weed Control Studies
- 2005 Dry Bulb Onion Weed Control Studies
- 2004 Dry Bulb Onion Weed Control Studies

Acknowledgements

- Rio Farms
- Christensen and Giannini
- ConAgra
- Integrated Crop Management, Inc